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ESSAYS AND CASES.

ART. I.—*Cases illustrative of the Effects of* IODINE. By JEREMIAH H. BROWER, *of Elizabethtown, Ohio.*

Case 1. N. M., aged 19, of light complexion and strongly marked scrofulous habit, about six months since, perceived a small tumour, on the side of the neck under the lobe of the left ear, which gradually increased in size, though unattended with pain. When she applied to me for assistance, a cluster of enlarged glands, about the size of an egg, extended from the angle of the lower jaw to the sternal end of the clavicle, hard and unyielding in consistence, and very irregular and lobulated in structure. Her general health had been much impaired for some time previous, being constantly harrassed with a dry, hard cough, without any expectoration. She complained of a sense of straitness and difficulty of breathing, and was much emaciated: her extremities were somewhat œdematous: digestion perfect, and catamenia regular. From these circumstances, connected with the fact of two members of her family having recently died of confirmed phthisis, I was induced to believe, that a tubercular affection of the lungs was in progress. The ordinary routine of treatment for similar local affections, was diligently pursued for some time, with no apparent effect. I then resolved to prove

the effect of the Iodine, and accordingly prescribed the tincture, made according to the following formula:—R. Hydriodat. Potas: ʒij. solv. in sp: Rectif. ʒv; 15 drops to be taken in a little mint water, 3 times a day: she was also ordered to rub the tumours well once, twice or thrice a day, with the following liniment: R. Tinct. Iodin. ʒij, Lin. Sæpon. ʒij. mix. On the sixth day of this treatment, a perceptible diminution of the tumour had taken place; and the skin over it, which had been tense and adherent to the parts, could be readily corrugated: her cough had greatly diminished, and her breathing was less difficult and laborious. As her pulse was now full and bounding, and she complained of severe headache, she was bled to 18 oz. and directed to omit the tincture for two days. She then resumed it, and gradually increased the dose to 25 drops, thrice a day: the tumours meanwhile rapidly decreasing, and with them the cough and pulmonic irritation. At the expiration of six weeks, the swelling had disappeared, and her general health was almost re-established; her strength and flesh were rapidly recruiting; and every symptom of incipient phthisis had vanished. This case occurred in the month of February. I saw the patient a few days since, she continues free from complaint, and has become comparatively fleshy.

Case 2. John C., a stout healthy lad of 18, was, in the summer of last year, thrown in wrestling, the knee of his antagonist striking and violently bruizing the scrotum and testes: he immediately fainted from the exquiste pain, and, about six weeks afterwards, perceived the right testis considerably enlarged, and, occasionally, after hard work, to be extremely painful. It continued to increase rapidly, until, being no longer able to conceal it from his parents, a respectable surgeon was consulted, who pronounced it a scirrhus of the testis, and proposed immediate extirpation as the only safe treatment. The patient, not relishing this advice, applied to me for assistance. The right testis was now enlarged to the size of a goose egg; hard and uneven on its surface, and very little painful on pressure. The skin was natural and healthy in its appearance, and adherent to the testis in

several places. The epidydymis was enlarged, and its convolutions painful: the cord, also, was diseased as high up as it could be felt. This circumstance seemed to contra-indicate an operation. Upon its anterior surface were two or three superficial abscesses, which, when opened, discharged a small quantity of thin pus. For several weeks previous, he had, frequently, acute pains darting up the back and loins; and, besides the inconvenience felt from his back, his general health had become considerably impaired. Under the impression that the evident derangement of the digestive function might have some influence on the local disease, he was ordered to take Blue Pill and infus. Quassiæ; and to rub the tumour twice a day with camphorated mercurial ointment. By this treatment the general health was restored, the mouth having been slightly affected; but, at the expiration of a month, no diminution of the bulk or pain of the testis was perceptible. A variety of discutient applications were then used; and, for two weeks, the electrical shock was passed through it. I then, as a last resort, directed him to take 20 drops of the Tinct. Iodine twice a day, and to rub the part well with the liniment: the scrotum was suspended by proper bandages, and absolute rest enjoined. On the fourth day after commencing this treatment, the soreness of the tumour and darting pains left him, and he complained of a prickling sensation in it. He was obliged to omit the tincture for two or three days, as it produced distressing head ache and nausea, which were relieved by bleeding. By this treatment, at the expiration of four weeks, during which period he was obliged to lay aside his medicines several times, the testis was diminished to the size of a hen's egg; the skin of the scrotum became flaccid and corrugated as usual; and, at this time, the patient remains free from complaint, and no difference can be perceived in the size of the testes.

Case 3. J. Roberts, aged 56, was attacked in September last, with (as I suppose) general inflammatory rheumatism, which seated itself more particularly in the shoulders, back and loins. By active depletion, &c. his fever and pains left him; but, as he convalesced, he perceived a remarkable

degree of weakness in the small of the back, with a dull heavy pain, and, occasionally, a difficulty in urinating; and sometimes there would be no alvine discharges for several days, and then he would have to resort to mechanical means to remove large quantities of hardened fæces. Supposing it to be the remains of his original disease, he paid but little attention to it, until he gradually lost all muscular power in his lower extremities, and became entirely unable to support himself or sit up. At this time (November) I saw him, and upon examination his general health was pretty good; appetite regular; a dull obtuse pain about the first lumbar vertebræ; his lower extremities perfectly paralysed, retaining their natural heat and sensibility, but the power of voluntary motion extinct, affording a fine specimen of Mr. Bell's distinction between the nerves of sensation and motion. To the ischuria, which at first troubled him, had succeeded a perpetual dribbling of urine,—manifesting a total suspension of the power of the sphincter vesicæ; and so entire was the loss of muscular energy in the rectum, that not a particle of fæces could be expelled without manual assistance. Upon a close examination of the vertebral column, no deviation from its regular and healthy aspect could be perceived, and percussion upon the spinous processes produced no pain or uneasiness; blisters, sinapisms, electricity and lotions, without number, had been applied; the Ung. Tart. Antim. had been used, liberally, without any effect. From the apparent integrity of the vertebral column, and the peculiar manner in which the disease was developed, I could not believe it to be a carious affection of the vertebræ or the intervertebral substance, so ably described and treated by Mr. Pott; and was convinced that the paralysis proceeded from a morbid thickening or enlargement of the theca vertebralis, lessening the calibre of the spinal canal, and thereby pressing upon the spinal cord, intercepting the nervous influence, and as forming a fair case for the trial of the Iodine. I accordingly ordered the tincture, 15 drops, three times a day, to be gradually increased, and a liniment composed of equal parts of Tinc. Iodin. Tinct. Lyttæ and Sp. Camph. to be rubbed in,

from the neck to the sacrum. With a view to act upon the rectum and bladder, he took aloetic pills daily, and the Infus. Fol. Uv. Ursi, ad libitum. After pursuing this course for five or six days, excessive vomiting, head ache, and distressing sense of tightness across the breast, induced me to discontinue the medicines. He was bled from the arm to 18 oz. and 6 or 8 oz. more were abstracted by cupping on each side of the lumbar vertebræ; by which means he became relieved, and resumed the use of his medicines, which did not again produce any untoward symptoms, although he increased the dose of the Tinct. to 30 drops. In two weeks from this time, he could support himself upright in bed, and could void the fæces naturally, and retain his urine for two or three hours. From this period his recovery was unabated and rapid, and at the expiration of two months he was able to walk across the room without assistance, and the functions of the rectum and bladder were entirely restored.

The success of this interesting case afforded me the highest gratification, as illustrating, finely, the effects of this powerful agent, and justifying the diagnosis of the case.

Case 4. M. D., a sickly looking girl, aged 14, had, for two years, an indolent enlargement of the parotid gland, which gradually increased in size, until it had become as large as the segment of a hen's egg, producing great deformity and pain with difficulty in masticating. She was evidently scrofulous, and manifested strong indications of disease of the mesenteric glands. I directed 10 drops of the Tinc. Iodin. twice a day,—the iodine liniment to be rubbed in the tumour, and blue pill, with occasional laxative doses of rhubarb and magnesia. As the patient resided a considerable distance from me, I did not see her until three weeks had expired, when the enlarged gland had become reduced one half; her general appearance and health were greatly improved; appetite and digestion regular; her medicines had produced no unpleasant effect whatever; and she was ordered to increase the dose of iodine to 15 drops, and to continue her other medicines. In two weeks I saw her again: the tumour now had nearly disappeared, and every indication of return-

ing health was manifested; she has become fleshy, and no vestige of the disease of the parotid remains.

I am now using the remedy in a case of incipient phthisis, in a decidedly scrofulous young woman, in which the past effects of the treatment give the most confident assurance of an entire cure being effected. In this case, also, the unpleasant influence of an over-dose of the article upon the sensorium and stomach, has obliged me to omit it for a few days, and employ venesection; which has uniformly relieved every unpleasant symptom.

It is not my purpose to enter into any disquisition as to the modus operandi of this important acquisition to the Materia Medica; but simply to communicate the results of my own experience with the article. Great discrepancy of opinion has existed with several eminent names, as to the utility and safety of the internal use of Iodine. Dr. Coindet, of Geneva, and Dr. Gairdner, discarding it as utterly unsafe and dangerous; while with others, of perhaps equal talent and discrimination, especially Dr. Manson, of Manchester, it has proved almost invariably safe and successful. "Quis sufficet tactas componere lites." Under these circumstances, it seems desirable to distinguish, accurately, the peculiar circumstances in which its use is indicated or may prove injurious; as it is only by patient and judicious investigation we can arrive at any fixed principles, on which to prescribe so powerful an agent upon the lymphatic system.

JEREMIAH H. BROWER.

Elizabethtown, Ohio, April, 1828.

ART. II.—*An account of a rupture of the Pylorus, with the appearances after death.* BY THE EDITOR.

In the 10th number of the Western Medical and Physical Journal, I published an account of the death of John McDonald, from a rupture in the Jejunum from external violence, the abdominal parieties remaining entire. I am now about to report a case of ruptured Pylorus, attended with analagous symptoms, and terminating in a similar manner.

In the afternoon of the 14th of April, 1828, I was called to see E. P. aged 38 years, by occupation a cordwainer. He was said to labour under colic; and to have been attacked suddenly and violently. I found him sitting up, with a pale and cool skin, a feeble pulse, beating not more than 48 strokes in a minute, and complaining of excruciating spasmodic pain in the abdomen, the paroxysms of which were followed by incomplete fainting fits. Regarding it as an attack of flatulent colic, I, immediately, directed a hot, foot-bath; and began the preparation of a large dose of opium and calomel. Before it was ready for administration, he was seized with retchings, and drank a glass of tepid water. Slight vomiting occurred, with agonizing pain, which was followed by a degree of syncope that bordered on dissolution. As soon as he revived the portion of opium and calomel was administered, together with a quantity of paregoric. Stimulating, cathartic enemas were then employed; but they produced no fæcal evacuation, and, indeed, were themselves but partially discharged. About 10 o'clock I left him for the night, in the care of my young friend Dr. McDowell. The calomel and opium were repeated; laudanum was liberally administered; a dose of castor oil was given, and the injections were repeated, in the course of the night; but nothing more than palliation followed. The next morning, I found him thirsty, in pain and drowsy, with his abdomen distended, especially *in epigastrio*, and tender on pressure. His pulse was feeble, exceedingly variable in its rythm, at no time more than 60 in a minute, and frequently down to 46. It was obvious that peritonitis had supervened, and I bled him. The blood was sizy; but his pulse fell instead of rising in its energies; no alvine evacuation ensued; nor were the pain and swelling diminished. Calomel was now administered in large and repeated portions, with occasional doses of sulphate of magnesia and castor oil; the injections were repeated, and the abdomen was blistered. In the evening the symptoms were mitigated, and a small quantity of feculent matter was discharged. During the night a gentle salivation came on; he rested badly; had occasional retchings, in which he threw up

but little; and the next morning was worse, than I had left him in the evening. The epigastric tension, and soreness on pressure, especially, had increased. The pulse remained nearly the same in frequency, but was still weaker and smaller. The case now gave me equal embarrassment and apprehension; for it exhibited unequivocal evidences of abdominal inflammation, combined with an exhaustion of the vital powers, which was as manifestly occasioned by something else, than the peritonitis, which had been developed. I could not doubt that a structural læsion existed; but of what kind it seemed impossible to determine. Examination was made for hernia—ventral, inguinal and femoral—but none existed; and I was led to conjecture that intussusceptio had taken place. I desired a consultation, and, in the afternoon, Dr. Pierson was called in. He was struck with the obvious signs of peritoneal inflammation; and the patient was again bled, more copiously than before. The pulse sunk during the operation, and the blood was not sizy. The striking resemblance of the case to that of McDonald, confirmed me in the opinion of its necessary mortality; but, as the patient retained his senses perfectly, and with his friends was desirous of being engaged in curative measures of some kind, they were continued. Among other means the croton oil and oil of teribinth were given liberally,—the latter was applied to the abdomen, and tobacco injections were administered: but every thing proved unavailing. The abdominal tumefaction and agony increased; his pulse became imperceptible, and towards morning he expired; about 60 hours from the commencement of the attack.

EXAMINATION OF THE ABDOMEN.

Leave being granted to inspect the abdomen, it was done the evening after his death. The distension was very considerable, and upon penetrating the cavity of the peritoneum, a great quantity of offensive gas escaped. On making an extended crucial incision, that membrane was found to be inflamed, and to have thrown out a quantity of coagulable lymph, with some admixture of pus. It was slightly agglu-

tinated to the bowels; and these were extensively adherent to each other. The whole were immersed in a turbid liquor, of a yellowish colour, which emitted the smell of turpentine, and exhibited no inconsiderable quantity of oil floating on its surface. A large worm (lumbricoides) was crawling over the bowels. After sponging out between two and three quarts of fluid, (the quantity extravasated) we found the outer tunic of all the anterior and upper convolutions of the intestines, great and small, in a state of inflammation. The omentum was in the same condition. The spleen was large, tender, and so much inflamed, that its peritoneal covering peeled off. The liver was but little affected. The gall bladder was distended with healthy bile. The urinary bladder was empty and uninflamed. On examining the intestines, from the rectum to the stomach, no læsion was found, till we reached the pylorus; where the cause of all the mischief was discovered. *It was ruptured more than half way round, and the fissure exhibited the appearance of a clean cut.* Through this, the contents of the stomach and duodenum had escaped into the cavity of the peritoneum. On slitting open the bowels and stomach, the mucous membrane of the former was healthy, and the pyloric extremity of the stomach was equally healthy, on both sides. The mucous coat of its great extremity was considerably, but not deeply inflamed. No ulceration existed any where; nor had any part suffered gangrene. The closest inspection of the pylorus, did not enable us to detect any organic change, that could account for its laceration.

REMARKS.

I shall not indulge in many speculations on this case. Two or three sentences may contain all that I have to say. The deceased had labored at his vocation, with unabated diligence throughout the day, and was occupied, in a way that required him to press the end of a board against the pit of his stomach, or near that part. This was the only external violence that he suffered. At one o'clock he ate a hearty dinner; and between four and five o'clock was suddenly seized with the

pain that has been described. Two hours afterwards, in attempting to vomit, he experienced the insupportable agony with syncope, which has been mentioned in the history of his case. Now the question arises, whether the rupture of the Pylorus preceded and occasioned the other symptoms, or occurred in the efforts to vomit?

Under either supposition, we may conjecture that his daily labours may have, to a certain extent, impaired the health and firmness of his epigastric viscera; and, consequently, predisposed them to suffer a læsion of structure. His stomach seems to have been torpid; for, when he vomited, he threw up undigested food which had been eaten two days before. Perhaps, therefore, it was greatly distended with flatus, while the Pylorus was contracted, as it is for the few first hours after dinner; in which condition the external pressure on the epigastrium might have produced the laceration. If it did not happen in this way, it would seem to have been caused by the vomiting.

ART. III.—*On the Spontaneous Combustion of the Human Body.* By M. MARC. *Translated from the Dictionaire des Sciences Medicales, for the Western Journal.* BY THE EDITOR.

When we observe the considerable quantity of wood, or other inflammable materials, which is required for the combustion of a corpse, and how slowly that operation proceeds, it seems almost incredible, that it should be effected in a living body, in a few minutes, at the ordinary temperature, and without the known contact of fire. Nothing, however, is more certain than this event; which deserves to be contemplated with the greatest care by physicians, and, especially, by those who devote themselves to the study of legal medicine. In fact, this subject is involved in almost every inquiry into the causes of doubtful death; and it is important to know by what signs, it may be proved to have taken place; that we may not attribute to others, that which occurred independently of all human agency, and was entirely the effect of physical

causes. The case narrated by the celebrated Lecat, in a posthumous memoir on spontaneous human combustion, (*Journal of Med. Chir. Phar. &c. for Jan. and Feb.* 1793) is well adapted to the support of this proposition. In 1725, a woman named Millet, an inhabitant of Reims, perished from spontaneous combustion. Her remains were found in the kitchen, about a foot and a half from the fire place; and consisted, only, of a part of the head, of the inferior extremities, and some of the dorsal vertebræ. As there was in the family a young and beautiful female servant, the husband was charged with having destroyed his wife, on her account. He was subjected to a rigorous criminal prosecution and found guilty; but, appealing to a higher and more enlightened tribunal, the case was pronounced to be one of spontaneous combustion; and thus was an innocent man preserved from infamy and the scaffold.

But we need not depend on the records of a period, characterised by the credulity which is inseparable from an imperfect knowledge of the physical sciences, for proofs of the reality of the phenomenon under consideration; as subsequent and better informed ages, have furnished examples so numerous and well authenticated, that we are no longer at liberty to cherish a doubt. *Some of these cases are given, in another volume of this Dictionary, under the head of* Cas Rares.

Dupont, Adolphi and Lecat seem to be the first who made publications on this subject; but it was reserved for M. Lair, at a later period, to illustrate it by a most comprehensive assemblage of facts, and ingenious reasonings. Nevertheless, the principal conclusions of this estimable author have been combatted by professor Kopp, of Hanau, in an excellent monograph which he has published on this subject. It is chiefly from the writings of these Savans, that I shall extract what I am about to say.

Messrs. Lair and Kopp have collected the best authenticated and most conclusive examples of human combustion, and to their works will I refer for these details. There is a case, however, which M. Lair has omitted, that deserves to be related here; seeing that the patient survived the catastrophy

for some time, and was able to state the circumstances which preceded and followed it. This case, which M. Joseph Battaglia, a surgeon of Ponte-Bosio, published in one of the Journals of Florence, from whence Dr. Fouquet extracted it into the *Bibliotheque Salutaire* of Paris, 1787, is so much the more worthy of introduction here, as it throws a great deal of light upon the occasional cause of the phenomenon which we are considering.

"Don G. Maria Bertholi, a priest, of Mount Valere, in the district of Livizzano, made a visit, says M. Battaglia, to the fair of Filetto, where he had business. After having devoted a day's journey to the neighboring country, executing some commissions, he pushed forward in the evening for Fenile, and reached the house of his brother-in-law who resided there. On entering it, he requested to be shown into the apartment where he was to lodge. For some reason he placed a handkerchief between his shoulders and his shirt, and every body having withdrawn, he proceeded to say his breviary. But a few minutes had elapsed, when the family heard an extraordinary noise in the room, where they had left him alone. Perceiving the cries of the priest, they repaired instantly to the apartment; and, on entering it, found him extended on the paved floor, and enveloped in a thin flame, which receded as they approached him, and at length entirely vanished. They placed him, as soon as possible, upon his bed, and administered to him every kind of aid that was at hand. On the following day I was called in, and, having examined him with care, I found that the skin of the upper part of his right arm was almost entirely detached from the flesh, and hanging loose. In the space comprised between the shoulder and the thigh, the integuments were also as much injured as those of the arm. I proceeded to remove the fragments of skin, and perceiving an incipient gangrene, upon that part of the right hand which had suffered most, I immediately scarified it; but, in spite of this precaution, I found it the next day, as I had feared, in a state of complete mortification.

"At my third visit, all the other injured parts were equally mortified. The patient complained of intense thirst, and was agitated with horrible convulsions. He discharged, by stool, a quantity of bilious and putrid matter, and was besides harassed with a continual vomiting; accompanied by a great deal of fever and delirium.

"At the end of the fourth day, after two hours of deep stupor, he expired. At my last visit, during which he fell into the lethargy of which I have spoken, I observed with astonishment, that the putrefaction had already made such progress, that the body of the patient exhaled an insupportable stench: worms had been generated in his skin, and were to be seen crawling even on the outside of the bed; and his finger nails of the left hand had pealed off. In this deplorable situation, I thought that nothing more could be attempted with advantage to the patient, and he was left to his fate.

"Having taken care to learn from the patient himself all that passed at the time of the attack, he informed me that when it occurred, he felt as if he had received a blow from a club on his right arm; and, at the same moment, he observed a blue flame issuing from his shirt, which, in an instant, was reduced to ashes, without the fire extending to the wristbands. The handkerchief which, on his arrival, he had applied over his shoulders, between his shirt and skin, remained entirely uninjured; as did, likewise, his drawers; but his cap was wholly consumed, without a single hair of his head being scorched.

"That the elementary fire dispersed in the air, had burnt his skin, reduced his shirt to ashes, and consumed his cap, without touching his hair, in the slightest degree, are facts, which I present to the public as well ascertained, and perfectly certain: besides, all the symptoms of the patient were those of a severe burn. The night was calm, and the air extremely pure. The persons who entered the room, at the time of the accident, did not perceive any bituminous or empyreumatic odour; nor did they observe any smoke. The lamp, previously full of oil, was dry, and the wick in a state of incineration.

In attempting to account for human combustion, we should never lose sight of the fact that it takes place in the living body; and, consequently, that we must reject every explanation, that is exclusively conformable to the chemical and physical laws, which govern bodies deprived of life. It is on this principle, that the reasonings of M. Kopp, must prevail over those of M. Lair.

From observations continued down to the present day, it appears that nearly all the victims of human combustion have been addicted to the excessive use of spirituous liquors. M. Lair has concluded, therefore, that the different parts of their bodies, having suffered an alcoholic impregnation, had contracted a degree of combustibility, which rendered them liable to be burnt up. This opinion, adopted by many physicians, and especially by Beldoes, seemed, at first, to derive support from the dissection of persons, dead from drunkenness, from whose bodies there issued a spirituous odour. M. Lair has added, also, that the flame observed in these combustions, absolutely resembled that of burning alcohol; that the individuals to whom these accidents have happened, were generally very fat or very lean; and that in the former case, the fat supplied fuel for the flame, while, in the latter, a defect of moisture favoured the combustion.

But on the principles of sound physiology, can we admit the assimilation of any substance, whatever, unless it be subjected to certain changes? Vitality, as M. Kopp has remarked, destroys existing combinations, and forms others according to its own laws: this faculty may, it is true, be modified or limited by disease, but it never ceases entirely until after death. We should even regard, as a character of organic action, its power to form compounds more complicated, than those which result from the action of inorganic nature. This action frequently modifies the substances which are received from without, and developes others which the chemists regard as undecomposable. The cones of the pine, growing upon a sterile sand, which does not contain an atom of calcareous earth, have nevertheless yielded that substance to the chemist Einhoff. The observations of M. Lampadius

have proved that vegetables contain earths which are not found in the soils where they grow, and the experiments of Braconnet, have left not the least doubt on this point.

Certain assimilated substances preserve, however, some one of their properties, such as their colour, odour, &c. We know, for example, that madder, taken internally, colours the bones red; that logwood communicates to the urine a similar hue; and rhubarb a yellow colour. The mushroom, (*agaric*) with which the inhabitants of Kamtschatca intoxicate themselves, imparts its inebriating quality to the urine. Frictions with garlic give to the breath the odour of that vegetable, &c. But are these substances really in the same state of combination, in which they were, before their ingestion and application; and, in the supposition that alcohol traverses the living body, as it spreads through a sponge, would not its great affinity for water, present an obstacle to its combustion? Besides, do not the inflammable eructations, which have been sometimes observed from brandy drinkers, prove that the liquor had already undergone a change in the stomach, since alcoholic vapours are not susceptible of taking fire, by simple contact with the atmosphere? The dissection of dead bodies is not more conclusive, since brandy, taken in large quantities, a short time before death, might readily transude through tissues, no longer endowed with the resistance of a vital principle. Our supposition is still further supported, by the observations of Metzger, who, in dissecting a great number of drunkards from brandy, of both sexes, never perceived any alcoholic odour, but found the stomach inflamed. Finally, the resemblance of the flame in human combustion, to that of alcohol, cannot be of any weight, since it equally resembles that emitted by several other bodies in a state of combustion, such as hydrogen gas, carbon and sulphur. We may add to these objections, that *every one*, who has perished by spontaneous combustion, has not been addicted to intemperance.

As to the state of corpulence or of leanness, it is certain that the fat in the cellular tissue, is never so destitute of

aqueous particles, nor the emaciation so extreme, as to produce a degree of dryness that would favor rapid combustion.

In grouping the various cases of spontaneous human combustion, as M. Lair has done in the work already quoted, for the purpose of deducing from them some general conclusions, we find:

1. That women are a great deal more subject to this accident than men. Now we know that the skin and the cellular tissue of the female sex, are more tender and relaxed, than the male, and that women are more inclined to corpulence.

2. That spontaneous combustion has been confined to aged persons; almost all of them having passed the sixtieth year.

3. That besides the debility of the vital powers incident to this age, the individuals have generally been further reduced by some enervating affection.

4. That they had augmented their delicacy of constitution by an inactive life.

5. That the majority of them have been fleshy, (polysarcous) which, at an advanced age, generally implies atony, especially of the lymphatic system. Dropsy and cachexy are also common among this class of subjects.

6. That the greater part of those who have suffered spontaneous combustion, have been given to the excessive use of ardent spirits.

7. That some burning body, such as a lamp or coal of fire, has, almost always, been found near the place where the accident happened.

8. That the combustion has been so rapid as to extend to the whole body, before assistance could be rendered.

9. That the flame has exhibited great mobility; been difficult to extinguish with water; and has not attacked the surrounding bodies, even when in contact with them for some time.

10. That the spot where the combustion happened, has exhaled a strong empyreumatic odour; that the walls, the the ashes, and the coals, have been covered with a fœtid and greasy moisture.

11. That the trunk of the body has been, almost always,

nearly consumed; and that, in the greater number of cases, the fragments remaining have been those of the head and extremities.

12. Finally, that in a great majority of instances, the event has happened in winter, when the atmosphere was cold.

Now, to arrive at an explanation of the phenomenon which occupies us, it is necessary to refer to the combustibility of the body, and to the cause which excites the combustion. The combustibility should, we conceive, be strictly and rigorously considered, since, in the state of health, the human body, is of the class of substances, that are burnt with difficulty.

This combustibility is caused by the weakness of the vital powers, from age, diseases, and a life of inactivity and excesses; the abuse of strong liquors, especially of brandy, debilitates the absorbent system, in a particular manner; and this condition may give origin, in certain cases, to an inflammable substance, which may accumulate in greater or less quantities, in the different parts of the body, according to their varieties of structure.

The combustible substance ought, then, to have the property of easily penetrating the cells of the body, without losing its combustibility by the contact of fluids.

There is not any known body, which more fully unites these conditions, than the inflammable gases; and without their agency, we cannot explain the occurrence to which our attention is directed. For it to take place, such a gas must accumulate in the cells of the body, as lymph accumulates in dropsy; and without insisting on the pre-existence of all the gas necessary to finish the combustion, we may suppose, with great probability, that this operation gives rise to a new gaseous developement, in the parts affected; and that a sufficient quantity is thus generated to finish the combustion. This theory obviates the objection founded upon the absence of a general emphysema in some of the victims of this kind of combustion, a state which appears, occasionally, to have existed.

Hydrogen is a principal element of animal bodies: it manifests itself during life, as well as after death; and forms a great

variety of combinations with caloric, carbon, sulphur and phosphorus. Without insisting very much upon this generally admitted truth, it may be useful, at this moment, to recollect the different phenomena, which have a direct and forcible bearing on our subject.

Morton saw a flame project from under the skin of a hog at the moment an incision was made. Bonamet Ruysch, having applied a candle to the vapours which escaped, in an explosive manner, from the stomach of a woman whom he was dissecting, observed them to inflame. Ruysch remarked a similar fact, in examining the stomach of a female, who, for four days before her death, had not taken any nourishment. In other cases the gas has become inflamed without the contact of a burning body, and merely from mixing with the atmosphere. Such, among other examples, is that published in the Memoirs of the Royal Academy of Sciences, of Paris, for 1751. It happened in the same year, in the vicinity of Neufchatel. At the moment when a butcher opened an ox, which had been sick for some time, and was very much swollen, a flame projected from the paunch, which rose to the height of more than five feet. It burnt, not only himself, but a little girl that stood by his side; continued for several minutes, and emitted a very disagreeable odour.

The production, in the system, during life, of hydrogen gas, is not to be doubted. It takes place daily, as we know, in the alimentary canal; and similar observations to those which have been cited, are not rare. Sturm, Nieremberg, Bartholin, Gaubius, and Gmelin, speak of inflammable eructations, which appear to have occurred, principally in the north; where, after the excessive use of brandy, the individuals have been suddenly exposed to a cold atmosphere. The National Gazette of Bohemia announced, a few years since, an accident of this kind, which happened to a shepherd of Lahowitz, who died, in presence of several witnesses, in consequence of an inflammable eructation—the flame resisting every means which could be employed for its extinction. In these different cases, the decomposition of the alcohol and of the animal substances contained in the stomach, gave rise to the phos-

phuretted hydrogen which inflamed, spontaneously, on coming in contact with the atmosphere. This inflammation was not more extensive, because the other parts of the body were not in a state to favor a general combustion.

Since we cannot deny the developement of inflammable gases, in the living body, we may consistently admit their accumulation in the cellular tissue, to a greater or less extent, according as it is more or less loose in its texture; and of course the parts which are the softest, as the trunk of the body, will be most subject to this accumulation.

But the human body, even rendered thus eminently combustible, cannot be inflamed without the agency of a spark; for, in admitting, that a part of the inflammable principle consists of phosphuretted hydrogen gas, we cannot sufficiently explain what takes place; and, in all cases, the sudden inflammation seems to have been general.

We regard the vicinity of a burning body, as the exciting cause of the combustion; and M. Lair has even concluded that we cannot, strictly speaking, recognise *spontaneous* human combustions, since they are but accidental; but we do not perceive, according to this supposition, how the combustion could be so rapid, so general, and so complete; and we conceive still less at what point it would first show itself. Besides, there are cases of human combustion, where there can be no question of the presence of an ignited body.

In comparing these different considerations with the accident which happened to the priest Bertholi, we are disposed to regard electricity, as performing an important part in human combustions; and must even consider it as the occasional cause of those accidents.

Nobody doubts the idio-electricity of a great number of animals; and this state is also met with in a high degree, in many individuals of the human species. The celebrated traveller Brydone made experiments upon a female, whose idio-electricity was such, that sparks projected from her hair every time she combed it. He was able even to charge a Leyden vial, and to inflame brandy with these sparks. His experiments were made during a period of se-

vere frost. A Senator of the United States, Mr. Jonathan Dayton, when at Washington, remarked, in pulling off and separating at night his woollen and silk stockings, that they emitted electric sparks. But nothing would be easier, than to collect an infinite number of such facts, disseminated through authors, both ancient and modern.

Inflammable substances accumulated in the bodies of the victims of spontaneous combustion, ought, even by their nature, augment the electric state. Overheating the body may contribute, equally, to an explosion of the electric matter; and it is thus that the proximity of fire or of a burning candle, may, in certain cases, aid in human combustion: at other times, this effect may be produced by violent exercise, or by any other cause which can excite electricity.

The electric spark, thus developed, penetrates with extreme celerity a body impregnated with any kind of inflammable matter; which, being every where inflamed, cannot be subdued by the aqueous particles of the system, so that the combustion, in a great number of cases, takes place with such rapidity, that the unfortunate victims have not time to call for assistance. The fire, as observation proves, at first spreads upon the surface, because it is in contact with the atmosphere, and thence extends to the deeper seated parts.

This theory will explain, without much difficulty, the following circumstances:

Women are more subject than men to spontaneous combustion, because their tissues are less compact, and, consequently, more disposed to gaseous accumulations.

Spontaneous combustions occur most frequently among the aged, because they are more addicted than the young, to the use of spirituous liquors; they take but little exercise, and their vital energy, especially in the lymphatic system, is enfeebled.

The character of the flame—its lightness, its mobility, and its resistance to the action of water—are all proper to hydrogen gas. In some phenomena of nature, such as the ignis fatuus, and certain meteors, in which this gas is supposed to perform an important part, it manifests the same properties.

The furniture and other surrounding objects are but little injured, because hydrogen gas, in combustion, does not inflame the greater number of bodies, unless it be in very close contact with them.

The water which bedews the walls of the apartment in which the combustion took place, as well as the coals and ashes of the deceased, is furnished by the combustion of hydrogen gas; and, also, by the evaporation of the liquids of the burnt body. The unctuous aspect of this water, is owing to the presence of a portion of fat, which has been volatilized by the heat.

The fœtid smell is that of the empyreumatic oil, formed during the combustion.

The trunk of the body is always more injured than the other parts, because of the great size of its cavities; and of the looseness of their cellular texture. Finally—

The winter is the season when spontaneous human combustions most frequently occur; because the cold air is a bad conductor of electricity, and promotes the idio-electricity of the animal body.

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EDITORIAL NOTE.

We have translated (hastily and inelegantly) the ingenious memoir of M. Marc, as a kind of supplement to the Discourse on Intemperance, published in the preceding numbers of this Journal. Although a translation and reprint, it will, we presume, offer considerable novelty to most of our readers, as the subject is one which has attracted but little attention from British and American writers. Indeed, of nine works referred to by M. Marc at the end of his article, every one is Continental. Whether this should be regarded as evidence that this event is more frequent among the people of the Continent, than those of Great Britain and the United States, or only that it has received more attention, we are unable to say.

Art. IV.—*Notices of the principal Mineral Springs of Kentucky and Ohio.* By the Editor.

The Mineral Springs of Kentucky and Ohio, especially of the former, are numerous and considerably diversified in their composition and qualities. They are but little known to the profession, even of those states; who, in general, are, therefore, unable to direct their patients to a proper choice. Having visited most of them, (though not with the means of an accurate analysis, nor for a sufficient length of time to observe all their effects) I propose, in this paper, to give a brief notice of those which constitute our principal *Watering Places.*

The countries on each side of the Ohio river, present an identity in the age of their rocks, but considerable variety in their composition. They are all secondary, and disposed in horizontal strata. The predominant rocks are grey lime-stone, abounding in organic remains; and sand-stone, alternated with shivers and slate-clay. The calcareous formation presents considerable variety in its geological character, as well as in its chemical composition. Springs are subterranean streams, supplied chiefly by the rains which percolate through the rocks over which they fall; and which, in their meanderings, dissolve such soluble matters as may be in their way; and hence the diversity, in quality, of the mineral waters, in the region of which I have spoken. Throughout almost every part of it, the common spring and well water, is *hard*,—in other words, is impregnated with the carbonate and sulphate of lime, the muriate of soda, and other saline substances. When any one or more of these, or other ingredients, are present, to a certain degree, the water is no longer regard as fit for culinary purposes; but pronounced medicinal, and resorted to by the valetudinary. In their selection, they are too often governed by considerations of convenience, or act in almost total ignorance of the relative effects of different springs. Thus they often suffer injury, when they expect to receive benefit. A mistaken choice in the watering place, is not, however, the only cause of disappointment. The conduct of the patient while there, and the exposures

to which he is subjected, contribute greatly to an unfavorable result. Hence it is by no means uncommon, to see invalids who left home in hope, return in discouragement, if not despair. For the infirm to derive advantage from the use of mineral waters, several circumstances must be attended to.

1. It is necessary that the spring should be well chosen, in other words, adapted to the case of the patient.

2. That it should be in a healthy situation; or one, at least, as exempt as possible from the causes which induced the disease which is to be cured.

3. That the malady should be curable; or, if not curable, susceptible of palliation.

4. That it should not be of such a kind as to be aggravated by exercise.

5. That the patient should be comfortably lodged, in a dry and airy apartment, instead of being confined in a small cabin or room, close upon the ground floor, surrounded by high weeds and grass, in a damp valley, as is too often the case.

6. That he should not participate in the dissipation, which is so commonly practised by those who visit watering places for amusement only.

7. That he should be exceedingly temperate and simple in his diet. Mineral waters of almost every kind sharpen the appetite, sometimes to a morbid degree, and the majority of patients, suppose, or pretend to suppose, that while at a mineral spring, they may indulge themselves with impunity. Thus, in numerous instances, the beneficial effects of the water, are more than countervailed, by errors and excesses in diet.

8. That he should visit the watering place between the 15th or 20th of May, and the same period in September. The proper time, in this country, is the four months preceding the autumnal equinox; though, on the whole, it is better and safer to limit the residence to the three summer months. The first half of May is almost always too cool and rainy to be comfortable; and most watering places too much infested with fevers after the first of September, to justify a longer sojourn at them. These are given, however, as general rules, to which there are exceptions.

9. That the patient should remain longer than is usual. Of all men, the Anglo-American is, perhaps, the most impatient. He arrives at a watering place, and, like a thirsty animal, obedient only to his sensations, proceeds to drench himself. In three days he is, perhaps, worse than when he arrived; and, in a week, he decides, that the waters can do him no good, falls into displeasure with every thing about him, and repairs to another spring, or returns home in regret, at his useless expenditure of strength and money.

In most cases, mineral waters should be drunk moderately and perseveringly. Their specific effects, in many instances, are not perceived, nor, indeed, produced for some time. Their first impression, on many invalids, is unfavourable; but, by continuing them, the constitution, at length, becomes reconciled to their action, and is ultimately strengthened by it.

10. That in journeying to the watering place, he should proceed with deliberation, and not in a feeling of anxiety to reach the fountain upon which his imagination is turned, subject himself to long daily journeys and great fatigue. The end cannot justify such means. He should look to the travelling, not less than the water to which it is to conduct him, as a source of benefit; and, so perform it, as to increase instead of exhausting his strength.

11. That he should not place too exclusive a reliance on the water. It may be an important, without being the only, means of cure. In many cases, a particular course of diet is necessary, and should not be abandoned. In others, certain medicines are requisite, and should be persevered in.

By an attention to these, and such other rules as individual cases will suggest, mineral waters may do good in various cases; and, aided by the travelling, and the reviving and alterative influences of pleasant scenery and new social aspects, may, sometimes, effect that which all the drugs of the apothecary could not reach; and, what is still more, may avert the fate which, in chronic diseases, too often awaits him who is, from day to day, compelled to swallow them *en masse*. There are physicians who estimate the value of their interference, by the bulk and number of their boluses; and any

spring, not absolutely impregnated with arsenic, would prove a fountain of health to all whom it might extricate from such keeping. These strictures, apparently severe, are directed against the practice in chronic diseases, only; but it is generally for them that mineral waters are prescribed.

Having premised these general remarks, on the use and abuse of mineral waters, I shall proceed to speak, in detail, of some of the principal watering places in the West.

Harrodsburg Springs.

The town of Harrodsburg, one of the oldest in Kentucky, is situated ten miles south of the river which bears that name, and near the geographical centre of the State. The site is elevated, rocky and rolling, but not hilly; and the surface of the surrounding country has the same character. Neither the town, nor its immediate vicinity, presents, in its scenery, any thing striking or picturesque; but within two or three hours ride, in different directions, the perambulating invalid may see several objects not unworthy of notice.

1. Union Village, inhabited by Shakers, who exhibit a characteristic specimen of the social, economical, and political relations of that singular people.

2. The spot denominated Knob-Lick, fifteen miles S. E. of Harrodsburg, five miles from the old and pleasant village of Danville, the site of Centre College; and two miles from the farm of the late venerable Gov. Shelby. The knobs or hillocks, are from one to two hundred feet high, more or less conical, some of them insulated, others connected by crumbling isthmuses,—the whole forming a group of barren, conoidal eminences, which are finely contrasted with the deep verdure of the surrounding plain. They consist of a marlaceous slate-clay, strongly inclined to disintegration, and reposing on shale.

3. The grey, mural cliffs of the Kentucky river, which flows in a narrow and winding ravine, nearly 400 feet in depth. This great natural canal, may be visited with facility, by several roads; and offers, in the grandeur of its high and precipitous banks, embellished with evergreens, a great deal, to interest all who have a taste for the sublime and beautiful.

But we must return to that which is more important to the invalid—

The Springs. These are four or five in number. They burst out near the summits of the ridges, on which the village of Harrodsburg, is built. The mass of these ridges is composed of lime-stone, much of which is of a fine grain, and impregnated with magnesia. All the springs afford water, essentially of the same composition; though the proprietors are accustomed to speak of them, as presenting some variety in their qualities and effects. None of the veins are large. They have no gaseous impregnation, and, consequently, do not sparkle. Their temperature is that of other springs, not more copious, in the same latitude—about 58° of Fahrenheit.

The water from one of them, on the land of Mr. Sutton, has been examined, with some care, by Dr. Best and myself. The following is a statement of the experiments made, and the results obtained; which, although not so rigorous and comprehensive, as to constitute a perfect analysis, will convey a correct general idea of the composition of all the fountains.

EXPERIMENTS.

1. Prussiate of potash and infusion of galls produced a slight discolouration, both before and after boiling.

2. Nitric acid occasioned no change, nor effervesence.

3. Oxalic acid produced an obvious and diffused whiteness, which appeared slowly, and the same effect occurred after boiling.

4. Acetate of lead threw down a copious white precipitate, soluble in nitric acid.

5. Nitrate of silver produced the same kind of precipitate, soluble in the same acid, and, also, in ammonia.

6. The carbonate of ammonia caused a slight whiteness; and, upon the addition of the phosphate of soda, a copious white precipitate ensued.

7. One thousand grains of the water, evaporated, left a residuum of dry white matter, which, when apparently deprived of its water of crystallization, weighed twelve grains.

During the evaporation a slight pellicle formed on the surface.

8. A portion of this residuum afforded an effervescence with several acids, and was wholly soluble, in dilute muriatic acid.

9. Of this effervescent portion, nearly the whole was found to be soluble in sulphuric acid. The remainder was probably lime; which, united with the sulphuric acid, would remain undissolved. From this solution, the addition of carbonate of ammonia and phosphate of soda, threw down a copious white precipitate.

10. One thousand grains of the water were evaporated to one half. Lime water was then added, which produced a turbidness. The liquor was filtrated. Oxalic acid was then added to it, and occasioned a precipitate. It was filtrated again, and concentrated still further. Acetate of Barytes was then added, (not in excess) and produced a copious white precipitate. The solution was finally evaporated to dryness, and heat enough applied to decompose and drive off the acetic acid. The residuum, dissolved in water, changed the vegetable blues to green.

CONCLUSIONS.

This water, it would seem, from the foregoing experiments, contains the following salts:

1. Sulphate magnesia, in large quantities. This is the characteristic ingredient.
2. Carbonate of magnesia, in a small quantity.
3. Sulphate of soda, do.
4. Sulphate of Lime, do.
5. Carbonate of Lime, in minute do.
6. Iron (probably in the state of a sulphate) a trace.
7. A minute quantity of sulphuretted hydrogen, as I ascertained by experiments, made at the spring itself.

From this analysis, it appears that the waters of the Harrodsburg Springs, bear some resemblance, in the materials which they hold in solution, to the celebrated Seidlitz fountain of Bohemia. Their predominant ingredient, is sulphate of magnesia, or Epsom salt; though the other matters which

they contain, especially the sulphate of iron, small as it is in quantity, may contribute to their beneficial effects.

I am not in possession of the facts, necessary to a full *expose* of their therapeutick powers; but that these are so great as justly to place them at the head of all the known mineral springs, in the states bordering on the Ohio river, I have no doubt.

The cases to which they are, in a peculiar manner, adapted, are chronic inflammations, and obstructions in the abdominal viscera. Thus, they are, eminently serviceable, in such cases of dyspepsia, as are attended with subacute gastritis; in almost every kind of hepatic disorder, except when the liver is indurated, and, consequently, incurable; and in constipation, so constant an attendant on diseases of the stomach and liver. They are almost equally beneficial, in chronic inflammations of many other parts of the system—especially of the serous and fibrous membranes. In tonic dropsies, in rheumatism, and in various affections of the periosteum from febrile metastases, from syphilis and from mercury, they have often effected a cure, when other means had failed. In several urinary disorders they have done equal good. In chronic diseases of the skin, they have, also, been found useful, when the patient has been subjected to a regimen, that has determined them to the surface. In pulmonary complaints, they have been found serviceable; but not in the same degree, as in disorders of the abdominal organs; and their use in these maladies requires discrimination. In chronic pleurisy, and the early stages of subacute bronchitis, they have performed cures; but in vomica, tubercular suppurations, and hepatization of the pulmonary tissue, they are injurious; and, if persevered in, may even prove fatal. When they have rendered occasional assistance in these affections, it was chiefly by correcting a morbid condition of the digestive functions, so often associated with them. In sick headache they, occasionally, do good; but many cases of that obstinate malady, are attended with such an enervated condition of the nervous system, that their sedative operation becomes prejudicial. In headaches, dependent, however, on a phlogistic diathesis, they are salu-

tary. Finally, in opthalmia, during the stages of acute and subacute inflammation—as long as depletives and sedatives are indicated--they may be relied upon as an efficient remedy.

It would be superfluous to cite other examples of their efficacy. The principle upon which they should be prescribed is obvious. Reducing the power of the heart, and acting as a diuretic, cathartic and sudorific, they are adapted to almost every case of inflammatory disease; while they are, contra-indicated, in most organic læsions, in exhausted states of the system from profuse discharges of every kind; and in all cases of broken up and ruined constitution. Of temperaments, the sanguineous and bilious bear them best: to the nervous and phlegmatic they are generally useless, not unfrequently offensive, and sometimes almost pernicious.

I have already indicated their *modus operandi*. Their influence on the circulation is, I believe, invariably that of a refrigorant and sedative. Their action on the kidneys is, in general, that of a powerful diuretic, in which the water itself, no doubt, performs an important, though not an exclusive, part. In the majority of persons, they, also, operate on the bowels, as a hydragogue cathartic; but those who are strongly inclined to constipation, or experience, in an uncommon degree, their diuretic influence, occasionally find it necessary to add to them a portion of the salts, which are prepared by evaporating the water, and are kept at the springs for that purpose. To determine them upon the skin, they should be taken, chiefly, at night; the patient lying in bed, with the surface of his body closely, but thinly covered. In these cases, two *small* matters require attention; for without an observance of them, the desired effect cannot always be obtained:

1. The forehead of the patient should be covered with a slip of flannel, as directed by Sydenham, when sweating is the object.

2. He should be left alone, or, at least, not be allowed to talk or read. If the waters be taken warm or hot, their sudorific effect will, in most cases, be greater, than if taken cold. Lastly, when all these means are unavailing, an opiate—

for example, the pulvis Doveri—should be employed, and will, in general, be successful.

It is a common remark, that these waters do not oppress the stomach. This is not owing to the presence of carbonic acid gas, or any other æriform fluid; but to their passing the pylorus, or being drunk up by the veins of the stomach, very soon after they are received into that organ. It is to the stimulus saline matters which they contain, that their early exit from it should be attributed.

It is proper to say a word or two, concerning the saline mass, which is obtained by the evaporation of these waters. It is called Epsom salt; but it, obviously, contains all the fixed ingredients of the springs, and might, if dissolved in a large proportion of cold water, form a medicated beverage, equally useful with that afforded by the fountains themselves. Indeed a dilute solution of these salts, in water impregnated with carbonic acid, and cooled with ice, would constitute a mineral water more palatable, and, perhaps, more efficacious, than those of Harrodsburg. Of these salts, considered as a substitute, for the refined and crystallized sulphate of magnesia, of of the shops, it would be right to make a most favourable estimate. I am by no means convinced, that any thing is gained on the score, either of taste or effect, by substituting the purified Epsom salt, for one rendered impure by the admixture of other saline substances; and I know, that many persons who have tried both, prefer the latter.

As this paper may fall into the hands of some, who do not belong to the medical profession, and as my object is utility, it may be proper to add, that the Harrodsburg waters are not antacid, in the true acceptation of that term. They are, popularly, said to contain magnesia; and are supposed to correct acidity of the stomach, in the same manner as the calcined or the lump magnesia. This, however, is a mistake. But a small proportion of their magnesia is united with carbonic acid, into a carbonate, which is a real antacid; the bulk of it is combined with sulphuric acid, forming Epsom salt, which cannot unite with the acid of the stomach; but may

prevent its reproduction, by correcting the disordered condition of that organ, which causes it to be generated.

There are other Epsom springs in Kentucky, besides those of Harrodsburg; of which the only one that has acquired notoriety, is situated ten or twelve miles from that town, and one from Perryville. It is named the

Rochester Spring.

It is a feeble but constant stream, that bursts out about 60 feet below the summit of a ridge of coarse grained, shell lime-stone. From the experiments and observations, which I have made upon this water, its sensible qualities, composition and effects, are so nearly the same, with those of the waters just described, that a detailed account of them would be superfluous.

Olympian Springs.

In July, 1823, I spent a week at these springs, which constitute one of the oldest and most noted watering places of Kentucky; and what I shall say of them, is, chiefly, transcribed from notes made on the spot, at the time.

They are situated in Bath county, about 50 miles east of Lexington, on the waters of Licking river, which unites with the Ohio opposite Cincinnati.

On approaching them from the west, the country undergoes a change in its topography, geology and botany. The gentle slopes that give such beauty to the basin of Elkhorn, and the "country roundabout," of which Lexington is the metropolis, are succeeded by high and steep hills, the summits of which are narrow and serpentine. This is the commencement of the broken country; which, becoming more and more alpine, as we advance to the east, at last terminates in the Alleghany mountains. With this change of aspect, there is a corresponding change of structure. This first shows itself, on approaching Slate creek, between Mountsterling and the springs, where we observe strata and beds of arenaceous lime-stone, alternating with the blue, shell lime stone just passed over, and presenting organic remains of a different kind. The proportion of this new variety rapidly increases,

as we advance; giving indication, at every step, of the transition which is at hand. This is to shale, slate-clay and sandstone; all of which are soon visible *in situ*. By the time we reach the springs, they become the predominant rocks, and the limestone which, just before, was seen imbedding them, now becomes the imbedded mineral. With the blue, shell lime-stone, the *arbustum terræ fertilis* disappears, and is replaced by the chesnut, quercitron oak, mountain chesnut oak, persimmon, pine, red cedar, and other trees, and shrubs not found in rich and marly soils, with a corresponding change in herbaceous vegetation. Thus the observing invalid finds himself transported, in a single day, into the midst of objects and aspects which are both new and curious.

As the study of nature, with the eye of poetry or of philosophy, may alleviate many of the ills, either real or imaginary, (if, indeed, the latter can have an existence) which impel us to visit watering places, it will not, I trust, be regarded as unprofessional, to furnish distant invalids with a rapid sketch of what will be presented to their observation in this quarter.

The valley in which the springs are situated, is expanded, at the place where they arise, to the breadth of half a mile; and depressed about 300 feet below the surrounding hills. A branch of Beaver creek meanders through it, and contributes to sustain the luxuriant and succulent vegetation, which overspreads all the alluvial grounds of the West. The view of this spot, on approaching it, is pleasant and picturesque. The surrounding country is broken; but the traveller has not yet passed over the most rugged part. This lies before him, and stretches forward to the east, without any visible limits. Immediately beyond the valley, he observes the hills to rise in greater elevation; and, destitute, in their precipices, of arenaceous lime-stone, to exhibit little else than shale and slate-clay, the latter of which, within an hour's ride, graduates into stand-stone. Two miles from the springs, in the direction of which I have spoken, is a detached and somewhat conical summit, that has received the name of Olympus. It may be regarded as a specimen of the region adjoining, and still further east. The road to Beaver creek Iron works,

passes near the base of Olympus; and, at length, ascending from the valley, the observer finds himself at an elevation of of 6 or 800 feet; and sees around him nothing but deep and angular vallies, mural precipices, and rocky summits; which resemble ruined fortresses and towers. The ascent to many of these, is impracticable; but others may be scaled, and will reward the enterprise with views, which, to the inhabitants of a flat country, appear of no ordinary sublimity; while the coolness and freshness of the passing breezes, cannot fail to afford him relief from the enervating influences of a mid-summer sun. From one of these observatories I saw, in a neighboring valley, a rainbow, every part of which was beneath my feet. On the whole, however, the visitor should not expect many alpine phenomena—though his feelings will be pleasantly revolutionized by the wildness, novelty, and grandeur of the surrounding scenery.

The most interesting and valuable mineral of this region, is argillaceous iron ore, which exists in extensive beds, near the surface, and is smelted, at two or three places, on Slate and Beaver creeks.

A district of country so rugged and unproductive, has of course a thin population; and game is consequently not very scarce. The valetudinarian, therefore, who delights in hunting, has an opportunity to engage in it, with a good prospect of success; but without following him over the crags and fallen pines, which he must encounter, let us come to an examination of *the waters*, which have chiefly attracted him thither. These are supplied by several springs and wells; which present such differences in their composition, that of all the watering places of the west, this is supposed to afford the greatest variety.

I could not myself detect more than three kinds—a salt and sulphur, a white sulphur, and a chalybeate.

1. The salt and sulphur water is pumped up from a shallow well, near the margin of the brook. The temperature of the water as it issues from the pump is 58° of Fahrenheit. Its taste is that of a weak brine, moderately charged with sulphuretted hydrogen. Compared with the greater num-

ber of salines in the western country, the quantity of common salt which it contains is small, and the sulphuretted hydrogen is too little to escape from the surface in bubbles. When the neighbouring stream is swollen, its waters find their way into the well, which then affords a more dilute solution. It was in this state when my observations were made.

Subjected to the action of a variety of reagents, it afforded the following results; which, however, I do not state with confidence, in their accuracy.

1. Sulphuretted hydrogen.
2. Muriate of Soda, or common salt, and perhaps a little muriate of lime.
3. Carbonate of Soda.

I could detect no sulphuric acid, and, consequently, it contains no Epsom salts; and if either lime or magnesia be present, the quantity is exceedingly small.

2. The white sulphur spring, is situated half a mile from the well. It bursts out from a bank of shale, a short way up the side of a hill. Mr. Bankes, of Mountsterling, assured me that this spring made its first appearance during the earthquakes of 1811. Its temperature is 59°. Its composition is substantially the same with that of the well just described, but the ingredients of the two vary in their proportions. In the sulphur spring, the quantity of that substance is so great as to be deposited in the form of a whitish sediment upon the leaves and twigs which the water flows over; silver is more speedily tarnished than in the well; and the proportion of sulphuretted hydrogen, is sufficient to rise in bubbles to the surface; but still it is much less than in many other springs in Kentucky. On the other hand, the spring has but a weak impregnation of muriate of soda, compared with the well. The proportion of carbonate of soda seemed to be nearly the same in both. I could not detect in it, either sulphuric acid, or magnesia. The existence of iodine in sulphuretted waters, not having at the time of my visit, been made known, I did not of course, examine for them.

3. The chalybeate springs. These are two in number; and are situated about 40 yards apart; and half a mile from

the salt and sulphur well. They burst out from between strata of arenaceous limestone, near the bank of a stream which a mile below mingles its waters with those of the brook already described. Their temperature, as the water issues from the rock in lively currents, is 52° of Farenheit. They deposit a reddish sediment. From a variety of experiments, on the water of the lower of these springs, I was satisfied that it contains nothing, but the carbonate of iron, with the proportion of muriates and carbonates, which our common springs afford. I observed the bottles, in which it was carried to the lodges of invalids, to be incrusted with the red oxide of iron, from the decomposition of the carbonate of that metal, and the escape of the carbonic acid, by the agitation. Thus many who thought themselves in the use of an efficient chalybeate, were drinking a water, which contained little else, than what exists in ordinary springs.

Besides the fountains, which I have described, there is another—a feeble vien—near the principal well, and called the *Vitriol spring*. It seemed to contain muriates and carbonates only, and these in such moderate quantities, that it is used for culinary purposes, although spoken of as medicinal. I could not discover in it, either sulphur, magnesia or sulphuric acid.

As I shall have immediate occasion to speak of saline-sulphuretted waters, more potent than those of the Olympian valley, and of a chalybeate spring more noted, than those I have just described, I shall say but little in this place of their curative powers. The following are the principal observations which I made on the spot.

The salt and sulphur water was chiefly drunk. From 1 to 8 tumblers full, were taken in the morning. It lay light on the stomach. Its diuretic effect was prompt and certain. Its action on the bowels was in most cases so inconsiderable, that common salt was added to increase its aperient qualities; and many persons found it necessary, besides, to dissolve in it a portion of Epsom salt. To some dyspeptic stomachs it was oppressive, even, in small quantities; and in one delicate female I saw it produce a tendency to syncope. In many persons it produced abdominal distension; and a few thought it

the cause of more obstinate constipation, which arose perhaps from its great determination to the kidneys.

During my week's residence at the springs, I saw no invalids in a rapid state of recovery; nor heard any speak with applause of the beneficial effects of the water upon them. It is certain, however, that many interesting cures have been effected by it; although less powerful than some other springs of the same kind.

The water of the sulphur spring has been but little used, and its effects have not, therefore, been ascertained. They cannot differ materially from those of the water from the salt well.

The chalybeate spring seemed to be an object of secondary interest, and the resort to it was comparatively limited. Its effects, of course, are those which belong to all springs, impregnated with the carbonate of iron.

In summing up the particular advantages of a journey to this watering place, I would say, that they resolve themselves into the variety of waters in which it abounds; and into the novel objects and romantic scenery which it presents.

Blue Licks.

At this watering place there are several fountains, all, however, of one kind, the salino-sulphurous. They are found on either bank of Licking river, 24 miles from the Ohio, and at the intersection of the former, by the high road, that leads from Maysville to Lexington. From the first settlement of the state till within the last 15 years, salt was manufactured at this place. The manufacture was rendered unprofitable by the increasing scarcity of fuel, and by the discovery of stronger water in western Virginia and Pennsylvania.

In many respects, the region about the Blue Licks, is one of the most remarkable in Kentucky. Its destitution of soil is such, as make it quite a phenomenon, to all who have been reared in the fertile parts of the state. For miles in almost every direction, rocks overspread, with mosses and lichens, cover the surface, which sends up little else, than stunted oaks, red cedars, briers, and sumach bushes. These rocks

belong to the formation of blue shell limestone, which prevails so extensively in Kentucky,—they are, indeed, its upper strata, broken into fragments and left in place. That they once had a covering of loam and soil, like the other parts of the state, cannot be doubted, inasmuch, as we find spots upon which it is still retained. As my object is to depict the aspects of nature, instead of developing the causes which produce them, I shall bestow but a passing remark on those which have presented us with this surface of barren rocks, in the midst of such prevailing fertility.

The first adventurers to Kentucky, found the Blue Licks, the resort of almost every species of quadruped which dwelt in its forests. The herbivorous came to drink the waters and lick the soil, coloured blue by the sediment which they deposited; and the carnivorous, frequented the same place, to prey upon them. The number of deer, elk, and bison, was almost incredible. The last, especially, came in vast herds from distant parts of the country, forming roads, some parts of which are still visible. This, therefore, was a watering place from time immemorial; and judging from the osseous remains which have been dug up, the most ancient visitors of the spot, were the mastodon and arctic elephant. At certain seasons of the year, the bison, from a distance, were in the habit of sojourning at this place for weeks; and subsisting on the shrubs and herbaceous plants of the surrounding hills. To this destruction of the vegetables, which in all rainy and broken countries, are necessary to the stability of the soil, and to its being trodden up when wet, we may safely attribute, its descent into the vallies, and the consequent exposure of the rocky strata underneath.

Since the manufacture of salt has been discontinued, and fuel is no longer required, many parts of this little region, from which the trees had been cut down, have shot up dense groves of red cedar and sumach, which, in the absence of inhabitants, give to them the aspect of an infested wilderness. Such is a sketch of the scenery and ancient history of the Blue Licks. The invalid of romantic sensibility cannot but find at them, when, personally contemplated, not a little to

interest him; while those who are curious in their inquiries into the predatory wars, which the first settlers of Kentucky were compelled to maintain, with the Indians, will have an opportunity, within two miles of their lodgings, to view the spot on which a most bloody battle was once fought. I will only add, that to those who are fond of fishing, the river affords opportunities for angling, which are not to be enjoyed at any other public watering place of the state.

The Springs themselves, are more copious than the Olympian, just described; the water is much salter, and sparkles briskly, with sulphuretted hydrogen gas. Much of it is taken, in barrels, to the surrounding towns, even to Lexington—a distance of 40 miles—where it is held in good estimation. When kept in this manner, however, the dissolved sulphuretted hydrogen escapes, and the sulphur, remaining suspended or deposited on the sides of the vessel, gives to the water a more offensive taste, than it has at the springs, while its medicinal virtues, are no doubt diminished. Of these I shall not speak, till I have given some account of another watering place of the same kind; and the last which I shall describe in Kentucky. It is

Big Bone Lick.

This spot has acquired a notoriety that is not even limited to the United States. Its name explains the nature of this distinction. No place in America, perhaps none in the world, has afforded an equal number of large fossil bones, of which the most conspicuous, belonged to the mastodon and the northern elephant, though the whole are included, by the people, under the designation of Mammoth bones. They were enveloped in the mud of a narrow valley, through which the salt and sulphur water rises in a number of streams, some of which are copious. Through this valley, a stream descends from the surrounding hills, and mingles with the Ohio, at the distance of 2 or 3 miles. When the river is swollen, however, the 'backwater' is found quite at the springs. They lie in Boone county, 22 miles from Cincinnati by land, and twice that distance by water. The surrounding hills are romantic, but there is no distant perspective, and although

the scenery is superior to that of Harrodsburgh, it is inferior to the Blue Licks or Olympian springs. The deepest interest which the spot can inspire, arises from the osseous relicks, which its alluvial deposites afford.*

The Waters of this valley were once evaporated for salt, but the manufacture has been discontinued. They afford a larger quantity of muriate of soda or common salt than those of the Olympian springs, and abound in sulphuretted hydrogen gas, which is incombustible. They contain muriate of lime which also exists in the Blue Lick water and probably in the Olympian; and which, when salt was manufactured at those places, constituted a *bittern* that proved poisonous to cattle. They, likewise, contain a sulphate; but whether of soda or magnesia, I had not the means, when there, of ascertaining. They have not been tested for iodine. In a notice of the waters of Big Bone which I inserted in the picture of Cincinnati, in 1815, it is erroneously stated, that they contain gallic acid. The colouring of certain metallic precipitates, which I attributed to that acid, was no doubt owing to the sulphuretted hydrogen. They contain no iron.

* The first huge fossil bones ever taken from America to Europe, (unless some of those described by Dr. Cotton Mather, the early historian of New-England, as the bones of antideluvian giants, might have been carried from the colonies to the mother country) were found at this place; and some of them fell into the hands of Dr. William Hunter. This was about the middle of the last century. Since that time the spot has been explored, like another Herculaneum, and its disinterred relicks, have been disseminated over more countries, than the lost animals, perhaps, ever inhabited. The principal collections have been disposed of in the following manner. 1. That made by my precepter Dr. Goforth, in 1803 was, credulously, confided, in 1806, to the infamous, English traveller Thomas Arville, alias, Ashe, to be exhibited, in Europe. On his arrival at Liverpool, he sold on his own account, the entire collection, to Mr. William Bullock, who soon afterwards transferred his Museum to London. A part of them, were exchanged, by him, for other subjects of natural history, with the curators of the Royal College of Surgeons; a few were presented to Dr. Blake of Dublin, and to Prof. Monro of Edinburgh; and the remainder were sold, with his other curiosities, at auction. 2. The collection made by order of Mr. Jefferson, as President of the American Philosophical Society, about the year 1805, was divided between the society, and M. Cuvier, the Naturalist of France; who received the most interesting portion of them. 3. The acquisitions made, by the Western Museum Society in 1819, are now in the Western Museum. New explorations would, no doubt, show that many bones yet remain, as Mr. Letton has, within the last two years, added a number, to the Cincinnati Museum.

It is not unworthy of remark, that Mr. Bullock, is now a landed proprietor and resident, of the same county, in which Big Bone is situated.

The Modus Operandi of the Big Bone and Blue Lick waters is identical, and not materially different from those of the Olympian springs, and of Harrodsburg They are more energetic in their action than the former, and more pervading in their effects than the latter. Thus, it is not difficult to direct them to the skin; and it frequently happens, after their use for a few days, that an eruption takes place, and boils, of different sizes, form in the subcutaneous cellular tissue. These effects are especially experienced by those who bathe in them, hot. Like the Harrodsburg waters, they lower the pulse, augment the urinary secretion, and produce copious liquid alvine dejections. To obtain the last effect, however, many persons are compelled, in the early stages of their residence at the springs, to resort to magnesia or Epsom salt. They increase the appetite, and do not oppress the stomach by their weight, except when that organ is greatly debilitated; but they frequently excite gastric acidity, in the dyspeptic. It would seem that they should increase the secretion of bile, but I have not been able to satisfy myself that this is the fact during their use: the great dilution to which the excreta are subjected, may, however, have led to this uncertainty. I have not often seen invalids much benefitted by them, until after their return home. A period of better health, then, in general, succeeds, provided, the remedy was adapted to the disorder. In a case of subacute trachitis, I saw them effect a cure; but in true pulmonary consumption, and in scrophula, except in the early stages, they are prejudicial; and might prove fatal, if used at a late period. In chronic affections of the liver, in cutaneous disorders, and, in many cases of amenorrhœa, they are signally serviceable. In chronic rheumatism, they have often done good. Where relief from a costive habit is the object, they should be used for several weeks, when they will often prove effectual. To enumerate all the cases to which I suppose them to be adapted, and in which they should be forbidden, would require ampler opportunities for observation than I have possessed; and in a paper addressed, chiefly, to the profession, would, perhaps, be unnecessary. I shall, therefore, dismiss

the subject of their medicinal effects, and close my notice of the watering places of Kentucky, by a few remarks on their relative salubrity and comforts.

Kentucky, like the other States of the Union, has its summer choleras and autumnal fevers; and, although these, in common years, prevail every where, it is undeniable that some parts are more affected than others; especially with the latter class of diseases. Now, when the waters of the five situations which I have described, are so nearly alike in their effects, that the invalid might choose with reference, chiefly, to the healthiness of the place where he must sojourn,—which place should he select? As a witness in the interests of patients, and not of proprietors, I have no hesitation in testifying in favor of Harrodsburg and Rochester, over the Olympian Valley, Blue Licks, or Big Bone. The invalid resides, at either of the first, on dry and elevated ridges; at all the others, in deep and humid valley. Bilious fevers may occur, with fatal malignancy, at the former; but they are still more likely to happen in the latter, while ague and fever, which so seldom prevails on the ridges, almost annually infests the valleys, from the beginning of September, till white frosts have set in.

Further. In the facilities which they afford for taking carriage exercise, Harrodsburg and Rochester have an equal advantage over the other watering places of the state; and a like superiority might be awarded to them, especially to the former, in reference to the society afforded by the surrounding country. As to the society at the springs themselves, it will in general be nearly the same, throughout the whole. Creating itself, *de novo*, in every succeeding summer, it must of necessity be according to the new elements, which compose it; and over these no individual can exercise either physical controul, or moral supervision. It has, however, an adjunct which the proprietors might prune away; and it is to be regretted that they do not emulate each other, in the work of reform. I refer to the gaming machines, and gambling banditti, who periodically infest these places. They call off the attention of husbands, fa-

thers, and brothers, from those whom they had conducted thither for health; they draw the unwary into their snares with the greater facility, because of the idleness which prevails at such places; in fine, the very rumour of their presence, is offensive to the taste and feelings, of moral and religious invalids; and has often banished them from the springs, before a proper trial was completed. Let it not be said that, in these strictures, I am travelling beyond the limits of a professional paper. Medicine is no longer the art of astrology or coscinomancy; but a liberal science—comprehensive, searching, exhortatory: embracing in its periscope the entire moral and physical man: flourishing most in the bosom of the highest civilization: casting its glances into all the natural sciences, and useful arts—upon social institutions, morals and religion: correcting abuses, rectifying errors, exposing absurdities: discovering every where the semina of diseases, and pressing into its service, the circumstances of the moral world, not less than the productions of the natural. The fabulous Argus, with his hundred eyes, would not be an inappropriate emblem, for a profession which must explore all the labyrinths of nature, and contemplate every aspect of society.

Before taking leave of Kentucky, I ought to add, that among its springs, not yet extensively known, is one only four miles from Cincinnati, which is said to be of the same composition with those of Harrodsburg. It is situated in a healthy spot, and has, already, though of recent discovery, attracted considerable attention. In an early number of this Journal, I shall publish a further notice of it.

The geography of Ohio, not less than its institutions, differs, in several points, from that of Kentucky. With the exception of its S. E. portion, and its southern border contiguous to the river, it is much leveller than Kentucky. Its valleys are generally of great width; and it has extensive plains, either horizontal, or slightly inclined to the north or south, according as the streams which traverse them, tend to Lake Erie, or to the Ohio river. In its geology the differences are,

also, considerable. The hilly portions east of the Scioto river, in the southern part of the State, abound in shale and sand-stone, with salt, iron and coal; being, in fact, a part of the same formation in which the Olympian springs, of Kentucky, are situated. The other parts rest on blue shell, and arenaceous lime-stone, like the northern portions of the sister State; but the former has its laminæ separated by blue, stone, marl, which, in many places, becomes the predominant rock; and, greatly disposed to crumble down, has offered to the waters an easy conquest; and hence, in part, the extraordinary width of our valleys. It is, however, near the surface, that the greatest dissimilarities in the geology of the two States are to be found. Kentucky has, nearly every where, a thin covering of loam; its streams generally flow in narrow valleys, and it is, almost, without alluvial deposites—at least of sand and foreign, rolled pebbles. In Ohio, on the other hand, the rocky, calcareous strata are, in general, deeply buried up in loam; and in its expanded valleys, the quantity of water-worn rocky *debris*, both indigenous and exotic—to borrow the terms of a kindred science—is almost incredible.

The mineral springs of Ohio are numerous, though not greatly diversified in their properties, nor copious in the supplies which they afford. But few of them have yet attracted the attention of the profession, or been made places of public resort. In the shale and sand-stone region, there are salines; but I am not aware that they are frequented by any great number of invalids. The most common mineral waters of the State, are chalybeate. Feeble veins of this kind are every where met with, along the banks of our alluvial streams; and are, evidently, formed on the spot, by the percolation of rain water, through deposites abounding in vegetable recrements, and supplying oxide of iron and carbonic acid. Our arenaceous lime-stone, affords a water of the same composition, in large and perennial streams. Of these, one only, has, in any degree, fixed the attention of the public; and to it, as the only watering place of notoriety, in Ohio, I shall confine my remarks.

The Yellow Spring

Is situated in Green county, 64 miles north of Cincinnati, and 2 miles west of the Little Miami river. It is a copious and constant fountain, that issues from between strata of arenaceous lime-stone, and thus has geological characters, perfectly identical with the chalybeate springs, of the Olympian valley, in Kentucky. It bursts out near the summit level of that quarter, but is soon precipitated into a wild ravine, more than a hundred feet in depth. On its way, thither, it has, in the course of ages, deposited a great bank, of reddish yellow ochre, which is intermixed with twigs and leaves of trees. The temperature of this fountain is 52°—precisely that of other springs in the neighbourhood, which afford a great supply of water, and issue from crevices in the rocks. The water is transparent, does not sparkle, and has a slight chalybeate flavour; but it gives very little offence to the taste, and is used for a variety of domestic purposes. Its component parts are those of all the springs of a lime-stone country, with the addition of proto-carbonate of iron; or the black oxide of that metal, dissolved by the agency of carbonic acid; which, however, is not in such quantity as to be emitted in bubbles. After the water has left the aperture from which it issues, a portion of the gas combined with it escapes, and a part of the oxide of iron, passing from the first to the second degree of oxidation, is deposited,—constituting the ochreous sediment, of which I have spoken. When the waters are transported to a distance, the same thing occurs; and if they be carried far and much agitated, the oxide of iron may be so entirely thrown down, that the most delicate tests will scarcely indicate in the water, even a trace of that metal.

Of all the sensible effects of this water, its diuretic are the greatest; but whether, in reality, they are much more considerable, than those of common water taken in the same quantity, may be doubted. As a laxative, its powers are very small. It has no necessary determination to the surface of the body. Taken even in large quantities, it does not oppress or embarrass the stomach; but improves the health of that organ, sharpens the appetite, augments the powers of digestion, and increases

the general strength. To obtain from it, however, these salutary effects, it is necessary, by means of Epsom salt or magnesia, to maintain a regular habit of body. By adding the former to it, in the proportion of a tea-spoonful to the quart, a valuable laxative and tonic medicine is obtained.

The cases, to which this spring is adapted, are not those which require the waters of Harrodsburgh or Big Bone. It will not reduce inflammation; and, if there be unsubdued and smothered fires lurking in any of the organs of the system, they must be extinguished, by a saline water, or some other means, before the invalid ventures to the Yellow Spring. Its waters are, indeed, rather restorative than curative. They are admirable for convalescents. They belong to the class of tonics; and if not the most potent, are among the most pleasant. In many cases of dyspepsia, morbid sensibility of the stomach and bowels, torpor of the liver, atonic dropsy, hysteria, hypochondriasm, and other nervous affections; in the exhaustion from profuse evacuations; in the debility consequent upon fevers; and, finally, in most cases of enervated and broken up constitutions, they are likely to produce effects the most beneficial.

As a place of residence for the *three summer months*, the Yellow Spring has much to recommend it. Being the most northern watering place of the west; and, elevated more than 800 feet above the level of New-Orleans, it offers as cool a retreat for itinerant valetudinarians, as can be had short of Saratoga; while from its topographical circumstances, it should be a healthy situation. After the first of September, however, its nights become uncomfortably cool and damp; when visiters from the south, may as a general rule, prepare to leave it. My own opinion is that in September and October they are more likely to enjoy good health in the city, than out of it.

The country, about the spring, is so level, as to permit the invalid to take exercise in various directions; and the villages of Xenia, Springfield, and Dayton are all within his reach. He may visit the two first and return on the same day. Of natural scenery, he will be presented.—First with the valley, into which the spring discharges its waters. The brook that

flows in this wild and narrow channel, falls over many successive ledges, constituting a series of little cascades; while its margin is fringed, (or formerly was) with a variety of beautiful shrubs, whose broad and heavy foliage, affords an agreeable contrast with the slender leaved cedars that adorn the cliffs of arenaceous limestone rocks above. Secondly, with prairies, many of which exist not far north of the spring, and display in the splendor and variety of their summer flora, enough to delight all, who have a taste for the contemplation of nature's fine arts. Thirdly, with the falls of the Little Miami, which are two miles from the spring. They will be found an interesting curiosity. The water falls in the course of a mile or two, not less than 200 feet.

"The stream is seen entering a chasm in the arenaceous limestone rocks, which underlay that quarter; in the course of a mile it is precipitated from several successive tables, when, being compressed to less than ten yards in width, it falls from a ledge of rocks, 6 or 8 feet, into a narrower fissure, of such great depth, that for several rods below there is no perceptible current. The sides of this fissure, which rise by estimation 50 feet above the surface of the water, are irregular, but correspond in such a manner as to suggest that they were formerly in contact. From this point, the rapids continue more than a mile. The chasm, widening and deepening, gradually terminates in the broad valley through which the stream afterwards flows in the Ohio. These effects seem to have resulted from the action of the current below, and the expansion of freezing water in the fissures above, which, operating in conjunction, have covered the steep acclivities with enormous masses of rock, whose former situations are still visible. These fragments and the superincumbent cliffs are decorated with four different evergreens—the Red Cedar, Canadian Yew, Hemlock and American Arbor Vitæ, interspersed with several other common trees and shrubs, which give to the scenery an aspect equally beautiful and romantic."—*Picture of Cincinnati—p.* 35.

It has not been my design to speak of the accommodations provided for invalids, at the different watering places of the west; but as they have heretofore been exceedingly limited at this spring, it may be proper to say, that they have recently been made every way correspondent to the natural comforts and advantages which are offered by that place.

With these remarks I close, a paper, written in too much haste to be made concise; and perhaps abounding too much in references to scenery and geological appearances to meet the approbation of the *severe* cultivators of our science. I cannot in conscience offer it, as a model, to my brethren of the west; but hope it may stimulate some of them, to deeper researches and happier efforts on the same subject.

Cincinnati, June 24, 1828.

1. ANALECTIC

1. *Peculiar Disease of the Heart.*—Our readers will remember that, within the last year, we described three or four cases of a peculiar disease of the heart—one in the person of the late celebrated Talma—another, from our own practice, the case of the late General Kyd; and one by Cruveilhier. The indefatigable Breschet has dedicated a long article to this subject in the last number of the REPERTOIRE, in which he has collected nearly a dozen of instances of this very curious and rare disease. We shall endeavor to seize the more interesting particulars of this paper for the information of our readers.

1. The first case which M. Breschet has been able to find on record. is one related by Walter, the father, in the year 1759. The patient was a merchant, 50 years of age, who had, for many years before his death, complained of præcordial anxiety and palpitation of the heart. A pouch was found arising from the left ventricle.

2. After alluding to Dr. Baillie's case, the following is detailed from Zannini, published in 1816. A gondolier at the age of 19 years, fell and bruised his chest. At the age of 25, he became affected with a complaint of the chest, attended with pain in the side, difficult breathing, cough, and bad expectoration, which symptoms were relieved by bleeding. Soon after this, he felt, for the first time, a pulsation in the *right* side of his chest, attended with a sensation as if a body was moving up and down there. He continued his avocations, and drank much wine. Two years afterwards, he became annoyed with a pain in the region of the heart, which was relieved by bleeding, but continued to return from time to time, especially on using much exertion. He had a disagreeable pulsation at the pit of the stomach. He lived two years in this condition, still pursuing his avocations, when his suffering were a little mitigated. Having attained the age of 29 years, he suddenly expired one day while making some corporeal exertion, after eating rather heartily.

On dissection, the lungs were found healthy. The pericardium contained a few ounces of yellow serum. From the left ventricle of the heart there went off a pouch, the size of a man's fist, which was adherent to the pericardium. This tumour opened into the cavity of the ventricle, and contained coagulated blood. The parietes of the eneurismal production varied in thickness, from three quarters of

an inch to an inch and a half. There was nothing else particular in the dissection.

3. This was a negro, who was received into La Charite, on the 17th October, 1796, in the agonies of death. He died the next day, after a most profuse nasal hæmorrhage. On dissection, it was observed that the heart was of its natural size; but, from the left ventricle, there went off a tumour, nearly as large as the heart itself. The parietes of this aneurismal tumour were of a cartilaginous consistence, although they preserved the appearance of muscle. The interior of the tumour presented several albuminous layers, of considerable density, exactly resembling those seen in an arterial aneurism, except that they were more pale. The cavity of the tumour communicated, by a rather small aperture, with that of the ventricle. The aneurism appeared evidently to be formed between the muscular substance of the heart and its pericardinal covering. The mitral valve was thickened and ossified. This case was recorded in the second edition of Corvisart's work. Laennec never saw an instance of the disease, and only touches on the subject, placing the disease under the head of "Dilatations partielles du Cœur."

4. Two cases of this malady were observed by M. Berard, in the dissecting room of La Charite, and whose histories were therefore, unknown. The second of these cases offered some remarkable phenomena. The man appeared to have been about 55 years of age, and the body was very fat. On opening the chest, the pericardium presented a most enormous size. The heart was prodigiously dilated, and, at the same time thickened in its parietes. From the summit of the left ventricle there went off an aneurismal pouch, whose interior was covered with concentric layers of organized coagulable lymph, but not of very long standing apparently.

5. The case which we gave in No. 14 of this Series, page 401 as related by M. Cruveilhier, is next introduced by M. Breschet, and this we shall, of course, pass over.

6. The next instance came under M. Breschet's own observation. On the 27th of March, a soldier, aged 49 years, was received into the clinical ward, stating that he had suffered, for six or eight months, from oppression and want of breath, especially on using exercise. The limbs and belly were now infiltrated—he was unable to lie down in bed—the left ventricle of the heart communicated a considerable impulsion to the cylinder, and each contraction was attended with a whizzing noise, (bruit de soufflet) which was very distinct, but which, however, diminished afterwards, and finally disappeared. The pulse was small, and sometimes unequal. Diuretics, purgatives, &c. were employed with the view of removing the consecutive dropsical swellings. On the night of the 18th May, the patient suddenly became insensible, and complete hemiplegia of the right side ensued.—Bleeding, leeching, &c. were used, but the hemiplegia continued, although some degree of the intellectual functions was restored. He died on the 23d May.

Dissection. There was serous effusion between the membranes, and in the ventricles of the brain. The right corpus striatum was of a livid colour, and completely softened almost into a fluid. This softening was exactly confined to the corpus striatum, and no other morbid appearance was seen in any part of the brain or cerebellum. The heart was nearly double its natural size, and, from the left ventricle, a small pouch went off, such as has been described. The great size of the heart was occasioned by the dilatation of the left ventricle, whose parietes, however, could hardly be said to be thickened. The tricuspid valve was in a state of induration approaching ossification. The interior of the pouch presented concentric layers of dense fibrine. The liver was granulated.

7. The case of TALMA forms the next instance adduced by M. Breschet, but this has been already noticed in our own Journal.

GENERAL OBSERVATIONS AND CONCLUSIONS.

Our author remarks that the word *aneurism* has given rise to numerous altercations, discussions, and erroneous deductions. By this term have been understood various and essentially different diseases of the heart and of the arteries. It is also remarkable, that we have admitted the existence of certain morbid conditions of the heart which we have denied to the arteries and *vice versa*. Thus, every one will allow that the chambers of the heart may become dilated, with or without *thickening*—with or without *attenuation* of their parietes; but it has been denied that there can be an aneurism of the heart produced by rupture of the fleshy parietes, and dilatation of its membranous envelopes. In respect to the arteries, it has been contended that there can be no such thing as true aneurism—that is, a general dilatation of the whole cylinder of the vessel; but that, in all cases, there is a morbid condition of the inner and middle coats, with laceration of these tissues, and the formation of a tumour on one side of the vessel, in which is contained blood, or layer after layer of fibrine. Sennertus, Fab. Hildanus, and Scarpa, maintained this doctrine. But it is too exclusive. There can be no doubt that a diseased condition of the arterial coats, with partial laceration or dilation of them into a pouch, is the more usual form of aneurism; but to deny that there can be a general dilatation of the calibre of the vessel, without laceration or disease of the coats, is an error. In 14 examinations of aneurismal tumours, BURNS found but one in which the doctrine of Scarpa was impugned. Still this one exception in 14 cases proves that the rule is not exclusive. The present paper, and others which we have laid before our readers, evince that the heart is liable to the same kind of disease as the arteries—namely, partial attenuation, rupture, or dilatation of the parietes of some of its chambers, with the consequent formation of a pouch, containing coagulated blood, or layers of fibrine. Observation has proved, that these aneurismal pouches are almost always found to go off from the left ventricle of the heart. What can be the cause of this? M. Portal is of opinion that these pouches may form without any pre-

vious disease in the parietes of the chamber. He thinks the disease is more the consequence of violent contraction, than of dilatation of the chamber. There can be no doubt that these pouches are often seen where the rest of the parietes are in a state of hypertrophy; but M. Breschet is of opinion, and we agree with him, that, in all probability, there is an inequality of power in the different parts of the chamber, previously to the formation of these pouches. It is very curious, however, that aneurism by dilatation should be extremely common in the heart, and comparatively rare in the arteries; while, on the other hand, the aneurism by rupture or partial dilatation of the parietes is the usual form of the disease in the arteries, and comparatively rare in the heart. The reason for this difference is not very apparent. M. Breschet has attempted to lay down some symptoms as tending to show the existence of this disease; but we consider them as quite uncertain—if not absolutely erroneous. It rarely falls to the lot of a medical man to see a specimen of this curious disease; but the one which we published—that of General Kyd, was not accompanied by any of those symptoms which M. Breschet mentions—indeed the patient never exhibited any symptoms during life, which indicated organic affection of the heart at all. Still we hold it extremely desirable that we should be acquainted with all the forms of organic disease that may be presented to our view in the course of pathalogical investigations; and with this view we have presented our readers with a succinct account of our learned author's paper on the above subject. The final conclusions to which M. Breschet comes are the following:

1mo. The heart is liable to be affected by a disease hitherto undescribed by nosographers or practitioners—2dly. That the disease is chiefly found affecting the left ventricle—3dly. That the *summit* of this ventricle is the principal seat of the disease—4thly. That the tumour is aneurismal. 5thly. That this aneurism, from the mode of its formation, the state of its parietes, and the parts contained in the cyst, may be considered analogous to the "false consecutive aneurism of arteries," in the sense employed by Scarpa—6thly. That the heart is liable to the same kind of aneurism which we commonly meet with in the arteries—a circumstance that might be reasonably expected, from their structure and functions.—Repertoir.—*Med. Ch. Rev. for Jan.* 1828.—p. 151.

2. *Intestinal Invaginations.*—Intestinal invaginations or intussusceptions are often seen in young subjects who have died of other diseases, and appear to take place in the act of dying, from some convulsive or inordinate movements of the muscular fibres of the intestines. They are thus, probably, of no consequence whatever. But when a portion of small testine is inverted into the colon—or when a portion of this last is inverted on itself, it becomes a very serious affair, and most generally fatal. It is with the view of furnishing some data for distinguishing this last and dangerous species of invagination, that M. Buet brings forward the two following cases, from the wards of Dr. Husson, in the Hotel Dieu of Paris.

Case 1. On the 17th of April, 1825, there was received into the above-mentioned hospital, a man, aged 40 years, formerly a soldier, but now a tradesman. This man, of large stature, and strong constitution, presented the following symptoms when received into hospital: Abdomen very hard and distended, as well as painful on pressure, especially in the *left* iliac fossa, the *right* being rather depressed, and void of pain when pressed. The abdominal muscles appeared in strong action; pains in the loins: frequent eructations; vomiting of yellowish matters; constant inclination to stool; colicky and dragging pains in the belly; constriction about the throat. During the paroxysms of colicky pains, the left iliac region presented the figure of a large convolution of intestine, bent on itself. The poor man's countenance was indicative of great suffering; the tongue was furred; much thirst; slow pulse. The patient stated the following particulars of his illness. During ten years' sojourn at Rochefort, he had experienced several attacks of intermittent fever, which had been treated by vomits, purgatives, and tonics, &c. Afterwards, he was very subject to vomiting and diarrhœa. On the 20th December, 1824, after some muscular exertion, he felt, in the *right* iliac fossa, a very acute pain, followed by colick, vomiting, and purging. These attacks came on frequently afterwards, with intervals of ease. He had occasionally discharges of blood from the bowels. The means that had been employed were leeches, fomentations, demulcent drinks, and the like. M. Husson considered the case as hopeless, and that nothing could be done but soothe the remainder of the patient's days. Thirty leeches were applied to the anus, anodyne lavements were thrown up, and fomentations were ordered to the abdomen. Little or no relief was obtained by these means. On the 23d of April, while straining at stool, the patient felt as if something had given way in his abdomen, and, in a few minutes more, he became very ill, the abdomen becoming inflated, and exquisitely tender to the touch. He died at eight o'clock the same evening.

Dissection. The peritoneal lining of the abdomen was every where inflamed, but there was no extravasation. Patches of recent coagulable lymph were, however, numerous. The small intestines were excessively distended with gas. Neither the cæcum nor ascending portion of colon could be found; they were carried forward, and inclosed in the last half of the transverse arch, and in the sigmoid flexure of the colon, which was as thick as a man's arm, and hard or solid to the touch. On examination, the cæcum was found lodged in the sigmoid flexure, in the iliac fossa. The invaginated portion consisted, therefore, of three parietes, as may be easily conceived, from the mode of introversion, since a portion of ileum was necessarily carried in with the cæcum and ascending arch of the colon. The invaginated parts were agglutinated together, and, in some places, gangrene had commenced. There was nothing particular in the other portions of intestine, beyond the distention, which might be naturally expected above so serious an obstruction to the evacuation of the bowels.

This case, M. Buet thinks, illustrates the effects of long-continued and drastic purgatives, to the intemperate use of which he attributes the invagination above-described. This case also shows, that an intus susception of great extent may exist for a long time, and yet a passage for liquid fæces may still obtain. Up to the day before the patient's death, he had fluid evacuations from his bowels.

Case 2. Pradier, aged 22, who had been in the hospital at Clermont, for vomiting and diarrhœa, with colicky pains, came to Paris, in July, 1825, in a very bad state of health, and entered the Hotel Dieu, on the 8th of August, under Dr. Husson. The patient's symptoms, at this time, did not portend the existence of so serious a malady as that which actually obtained. He had colicky pains and diarrhœa, with intervals of perfect ease, and his complexion was nearly natural. He was ordered emollient fomentations, diluents, and lavements. On the 12th and 13th of the same month, the symptoms were observed to be aggravated; the features were sharp; the pulse concentrated; and the iliac fossa of the left side was very painful on pressure. Leeches and opiates were prescribed. 14th. The pain was insupportable, and the patient felt as if something was tearing in his inside. He had nausea and vomitings, with spasmodic contractions of the fingers and other parts. 16th. Symptoms of peritoneal inflammation were evident, and leeches in great numbers were applied; but the disease went on unchecked, and death terminated his sufferings on the 18th of the same month.

Dissection.—The peritoneum was highly injected, and there were numerous adhesions and false membranes seen in different parts, but no effusion of extravasation. Neither cæcum, ascending or transverse arch of the colon, could be found. The descending portion was as thick as a man's arm, and very hard. On performing moderate traction, it was easily discovered that the cæcum and ascending and transverse arches of the colon, together with a portion of ileum, were engulphed in the descending portion of the colon. The cæcum was found in a state of gangrene.—*Archives Generalis.*—*Ibid.* p. 156.

3. *Endermic Medication.*—In spite of all the controversies which have taken place respecting the existence of a capability in the vessels of the skin to absorb substances applied to them—the general conviction, supported now by incontestable facts, is, that such absorbant power does actually exist—especially when the epidermis is removed. The method of introducing medicinal agents through this channel is by no means a mere matter of physiological curiosity. It may be turned to great advantage in many cases, where there are strong objections to the administration of medicines by the mouth. Thus, a person may become the subject of ague while labouring under chronic inflammation of the stomach or bowels—and, consequently, where bark or arsenic would be injurious. In such a case, the sulphat of quinine may be applied to the denuded surface of a blister, and the ague will be stopped without any irritation being

given to the stomach or bowels. Again, in cases of children, who have a natural repugnance to medicines, and especially to bitter medicines, the endermic medication offers a very convenient resource.

In a late Number of the Revue Medicale, the younger Martin has published several cases of intermittent fever, treated, at the Hotel Dieu, by sulphat of quinine, applied with cerate to blistered surfaces. At first, he applied the powder over the denudeu cutis, but it occasioned too much irritation, and the paroxysms were not stopped. He then mixed the quinine with cerate, and the object was obtained, without any local inflammation or pain being produced. A single case in illustration will be sufficient for our purpose.

Case. Leon, a soldier, of the 1st regiment of Light Infantry had been in the hospital upwards of four months, when M. Martin took his turn of duty, on the 1st of December, 1826. He had had a pernicious remittent fever, attended with several relapses, by which he was reduced to a state of great debility and emaciation. He was also affected with dry cough, and was compelled to keep his bed, from the general state of marasmus to which he was brought by his disease. By proper means, the cough was mitigated, and the patient began to recruit a little, when, on the morning of the 20th December, he was seized with a regular fit of ague, which left the cough in a state of exasperation. The next day, being apyrectic, a blister was applied to his arm. On the third day, in the morning, the blister was removed, and the surface dressed with cerate, in which was incorporated six grains of the sulphat of quinine. That day the paroxysm was much milder, and at somewhat a later hour. The quinine was continued, six grains daily in the cerate, and fever returned no more.

We need not multiply cases, as the foregoing presents an example that will be easily imitated, where it is deemed necessary. We apprehend that this plan may be applicable to a great many morbid conditions of the system, where the internal administration of remedies would be inconvenient.—*Ibid.* p. 158.

II. ORIGINAL.

4. *Report on the Weather and Diseases of Cincinnati, in the Spring of* 1828. The mean temperature of Spring, at this place, according to observations made for five years in succession, is 54° 29; which is within the fraction of a degree, of the mean heat of the year. For the period just named, the mean heat of each month was as follows: March 43° 97, April 57° 58, May 61° 32, from which results the mean temperature just stated.

The spring is, generally, supposed to present greater extremes of temperature, than the other seasons; but, at Cincin-

cinnati, they stand, in this respect, in the following order: Winter, Spring, Autumn, Summer. From observations for a a series of years, the thermometer may be expected to fall in March to 16°, and rise to 72o—in April to 28°, and rise to 84°—in May to 40°, and rise to 88°;—and, if it should not descend and ascend to these numbers, it ought to be considered that the variations are unusually moderate.

Our vernal winds are chiefly S. W., N. E., N. W., S. E. and W.—prevailing in the order in which they are here enumerated.

In the number of its fair days, our Spring occupies the following place in the catalogue of the seasons: Summer, Autumn, Spring, Winter.

In its progress, this season appears to be governed by no constant law; for in different years, it presents a very great variety in all its characteristics. Sometimes it is cold and rainy. Our deepest snows are, occasionally, in March; and snow, sometimes, falls, copiously, as late as the middle of May. March is subject to long continued rains, with north east winds; April is, generally, productive of showers, many of which are extremely abundant; May is, almost always, rainy at the close of its first week, and immediately afterwards brings frost. Its latter half is generally hot and dry. Now and then the whole vernal season is dry. It would not be loose phraseology to say, that winter and summer do not much respect the divisions of our calendar; for the former not unfrequently runs far into March, and the latter, still oftener, commences by the 20th of May. On the whole, our Spring is like a sitter, who does not retain the same aspect long enough, to suffer a portrait of definite character to be painted of him.

The Spring of the present year was rather cool and wet, than otherwise. The former quality might have been anticipated, after so mild a winter; but the latter could scarcely have been expected to follow so much rain, as fell in January and February.

Its prevalent diseases were the following: 1. Inflammatory affections of the respiratory apparatus. 2. Measles. 3. Mumps. 4. Ague and Fever. 5. Diarrhœa.

1. Inflammations of the lungs and their appendages, so predominant in the winter, continued to occur, but with mitigated violence, during spring. As the hot weather advanced, we observed the winter coughs of aged persons to subside. On the symptoms and treatment of these maladies, we have spoken so fully, in our last number, that we shall dismiss them with these remarks.

2. Measles. This malady prevailed, generally, throughout the late vernal season; but, although cases of it were met with in every part of the city, it by no means affected all who were liable to experience it. This, doubtless, arose from the qualities of the morbillous matter, whether it might have been diffused through the general atmosphere, or secreted by the bodies of the sick; and, to the same cause we may refer the great mildness of the disease, in almost all who were infected. We heard of no death from this malady throughout the whole season; and, in most cases, it required no professional aid. One of our patients, a woman, nearly 40 years of age, declared that she had suffered the same disease *twice* before. This third attack was of such violence, as to render medical assistance desirable, if not absolutely necessary. That it was measles, appeared, not only from the symptoms, but from the fact, that her three children were infected by her.

3. Mumps. This malady prevailed at the same time with the last; which it resembled, in being extremely mild, and in sparing a great number whom it might have attacked. It generally ran its course, without exciting a call for medical advice. We saw no cases attended with the metastases, which sometimes render it so formidable. In our practice, it offered but a single fact deserving of record. It was this. A little girl of strumous habit, with a well marked scrophulous ulcer beneath the under jaw, laterally, had the disease, in a positive, and rather violent degree, in both parotideæ:—affording an example of the simultaneous presence in the system, and almost in the same parts, of two distinct morbid actions.

[TO BE CONTINUED.]